

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for associating at least one rule with a key, comprising:

arranging a plurality of objects in a table ~~that is~~ based on an ordering of information associated with each object, wherein each object defines a key range comprising at least one key value and at least one of the key ranges comprises multiple key values;

if the key is provided, employing a search method to determine a starting object entry in the table;

if the key range of the starting object entry in the table is unequal to the provided key, employing another search method to determine an at least one object in the table ~~that is relatively equivalent to the~~ defines a smallest key range that includes the provided key; and

enabling the processing of the provided key based on at least one rule associated with the determined object wherein the at least one rule applies to all key values of the key range of the determined object.

2. (Original) The method of Claim 1, wherein the search method includes at least a binary search.

3. (Original) The method of Claim 1, wherein the search method determines if the provided key is equal to a single key associated with one object in the table.

4. (Currently Amended) The method of Claim 1, wherein the search method determines if the provided key is equal to a lower bound of a key range of keys associated with one object in the table, wherein the other search method operates in a left descending direction across the table.

5. (Currently Amended) The method of Claim 1, wherein the search method determines if the provided key is equal to an upper bound of a key range of keys associated with one object in the table, wherein the other search method operates in a right an ascending direction across the table.

6. (Currently Amended) The method of Claim 1, wherein the key is at least one of an IP address and or a telephone number.

7. (Currently Amended) The method of Claim 6, wherein the key is the IP address and information associated with the object includes at least one of a bound IP address, sister bound IP address, type, index, sister index, and or rule.

8. (Original) The method of Claim 1, wherein the table includes at least an array, wherein the information associated with each object is sorted in the array.

9. (Currently Amended) The method of Claim 1, wherein the other search method further includes:

searching from the starting entry in a left descending direction across the table to iteratively determine a lower bound of a range of keys associated with one object that is relatively

~~equivalent to the provided key~~ the smallest key range, wherein the other search method enables jumping over other objects in the table to determine the ~~relatively equivalent~~ lower bound; and

enabling the processing of the given key based on at least one rule associated with ~~the~~ one an object that is associated with the ~~relatively equivalent~~ lower bound.

10. (Currently Amended) The method of Claim 1, wherein the other search method further includes:

searching from the starting entry in ~~a right an ascending~~ an ascending direction across the table to iteratively determine an upper bound of ~~a range of keys associated with one object that is relatively equivalent to the provided key~~ the smallest key range, wherein the other search method enables jumping over other objects in the table to determine the ~~relatively equivalent~~ upper bound; and

enabling the processing of the provided key based on at least one rule associated with ~~the~~ one an object that is associated with the ~~relatively equivalent~~ upper bound.

11. (Currently Amended) A network device for associating at least one rule with a key, comprising:

a memory for storing instructions;

a processor for enabling actions based on the instructions, including:

arranging a plurality of objects in a table ~~that is based on an ordering of information associated with each object,~~ wherein each object defines a key range comprising at least one key value and at least one of the key ranges comprises multiple key values;

if the key is provided, employing a search method to determine a starting object entry in the table;

16. (Currently Amended) The network device of Claim 11, wherein the key is at least one of an IP address ~~and~~ or a telephone number.

17. (Currently Amended) The network device of Claim 16, wherein the key is the IP address and information associated with the object includes at least one of a bound IP address, sister bound IP address, type, index, sister index, ~~and~~ or rule.

18. (Currently Amended) The network device of Claim 11, wherein the network device operates as at least one of a router, firewall, switch, hub, ~~and~~ or server array controller.

19. (Currently Amended) The network device of Claim 11, wherein the other search method further includes:

searching from the starting entry in a ~~left~~ descending direction across the table to iteratively determine a lower bound of ~~a range of keys associated with one object that is relatively equivalent to the provided key~~ the smallest key range, wherein the other search method enables jumping over other objects in the table to determine the ~~relatively equivalent~~ lower bound; and

enabling the processing of the provided key based on at least one rule associated with the ~~one~~ an object that is associated with the ~~relatively equivalent~~ lower bound.

20. (Currently Amended) The ~~method~~ network device of Claim 11, wherein the other search method further includes:

searching from the starting entry in a ~~right~~ an ascending direction across the table to iteratively determine an upper bound of ~~a range of keys associated with one object that is relatively~~

~~equivalent to the provided key~~ the smallest key range, wherein the other search method enables jumping over other objects in the table to determine the ~~relatively equivalent~~ upper bound; and

enabling the processing of the provided key based on at least one rule associated with the one an object that is associated with the ~~relatively equivalent~~ upper bound.

21. (Currently Amended) A network device for associating at least one rule with a key, comprising:

a means for arranging a plurality of objects in a table ~~that is~~ based on an ordering of information associated with each object, wherein each object defines a key range comprising at least one key value and at least one of the key ranges comprises multiple key values;

a means for employing a search method to determine a starting object entry in the table if the key is provided;

a means for employing another search method to determine ~~an~~ at least one object in the table that ~~is relatively equivalent to the~~ defines a smallest key range that includes the provided key if the key range of the object at the starting entry in the table is unequal to the provided key; and

a means for enabling ~~the~~ processing of the provided key based on at least one rule associated with the determined object, wherein the at least one rule applies to all key values of the key range of the determined object.